

## THE DRIVE FOR PRECISION GEO-POSITIONING



**One of the world's most advanced survey vessels features bow and stern thrusters powered by Control Techniques modular AC drives to achieve position accuracy of  $\pm$  one metre.**

The Poseidon is the second vessel developed for seabed surveys by owners Neptune Survey Expedition, an Icelandic company started in 2008. A 69-metre long, 11.7-metre wide former fishing trawler, the vessel has been fitted with the latest surveying technology, including multibeam sonar and is also equipped with a remote operated underwater vehicle (ROV).

Its remarkable positional accuracy is attained with the Norwegian Konsberg navigational / positioning system that provides dynamic position control to achieve the 'DP1+' certification required. This ensures position control to a metre in any direction. The dynamic system uses satellite navigation to fix its position and the control system uses a combination of the propellers, rudder, and variable speed / variable pitch bow and stern thrusters to maintain this position. Ultrasound is additionally used to provide position control of the ROV.

Two Unidrive SP9 drives were supplied to control the 450kW bow and stern thrusters, used to maintain accurate lateral positioning of the vessel. The drives are controlled by a simple 4-20ma speed control signal from the Konsberg +1 navigation PLC that combines variable-speed thrusters control with hydraulic pitch control to give the required positional accuracy.

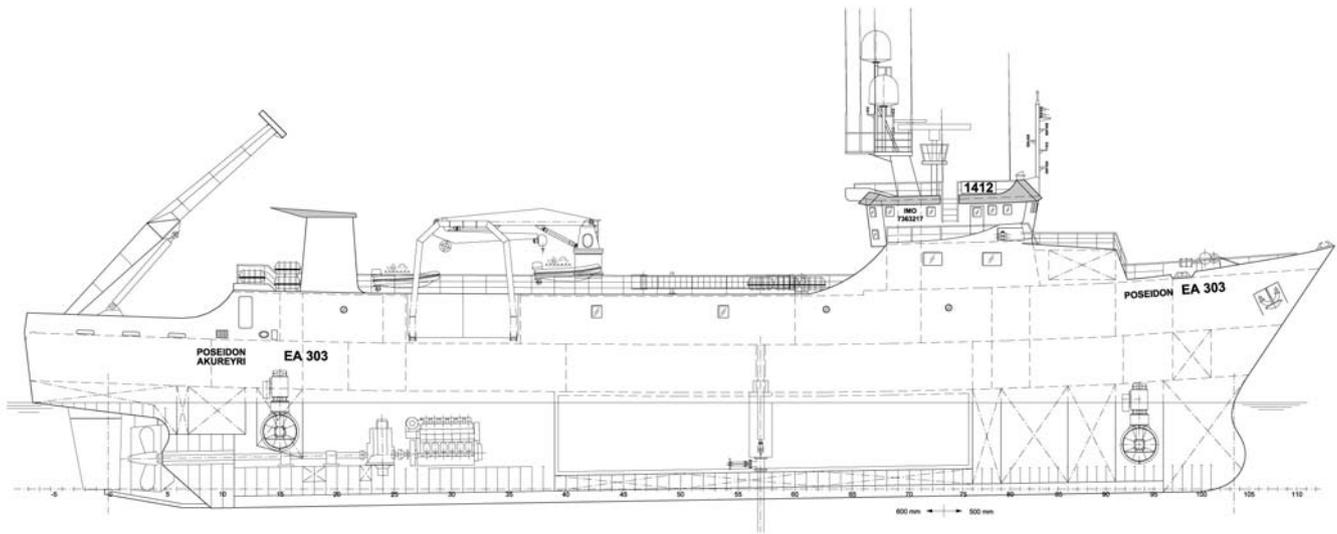
The thrusters are tunnel mounted in the bow and stern, with their motors direct mounted on top of the screws with no gearbox, and are highly dynamic, being capable of

### KEY BENEFITS

- DP1+ CERTIFICATION
- POSITIONAL ACCURACY  $\pm$ 1 METRE
- DYNAMIC POSITION CONTROL
- COMBINED SPEED & PITCH CONTROL
- DUAL REDUNDANCY
- WORLDWIDE SUPPORT



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decelerating from full speed (1300rpm) in just a few seconds, whilst the pitch control is simultaneously varying as needed. The combination of both speed and pitch control allows very fine positional adjustment.

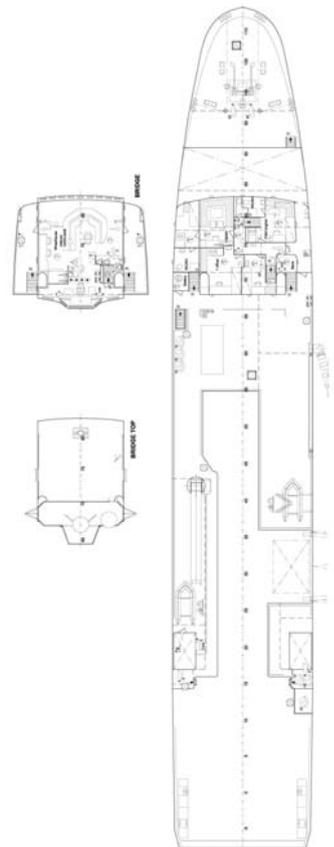
Poseidon will reach up to 12 knots in open sea and four knots during surveying. The current refit incorporates dual redundancy on most equipment, with the exception of the thrusters, which enhance its positioning standard to DP1+. However the Unidrive SP9 drives each comprise four AC drive modules which, in fact gives a level of redundancy. Should one, or even, two modules fail, the thrusters can still operate, albeit at reduced maximum speed.

The drives were supplied by Control Techniques' distribution partner in Iceland, Samey ehf via electrical contractor Rafeyri, who specified Control Techniques AC drives for the task.

"The Unidrive SP solution was both competitive and, being modular gave a degree of redundancy," says Rafeyri's Technical Manager David Hafsteinsson. "The issue of support was also important, and as the ship is to be surveying near Greenland and St Petersburg for some time to come, the nearby Control Techniques Drive Centre in Reykjavik and Russia was a contributing factor. Over many years, we have always had good support from Control Techniques," he adds. The Unidrive SP 9432 drive, rated for heavy duty, gives a motor output of 450kW. Part of the Unidrive 'solutions platform' AC variable speed drive range that spans 0.75kW right up to 1.9MW it is configurable into five operating modes – open and closed loop, vector, servo and

regenerating modes – with connectivity to most industry standard networks and accepting most position feedback protocols.

Neptune Survey Expedition, owned by partners Ágúst Guðmundsson, managing director and Magnus Thorsteinsson, executive director, provides a wide range of marine surveys and geological research services in the offshore market. The company's first research vessel, the Neptune, has spent 297 days at sea in the last 18 months since it was commissioned. Neptune has already achieved ISO9001, ISO18001 and ISO14001. Its new vessel, Poseidon, is to carry out much of the surveying associated with the Nord Stream gas pipeline from Russia to Europe.



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